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from OpenGL.GL import *
from OpenGL.GLUT import *
from OpenGL.GLU import *
import sys
import math

# Window dimensions
width, height = 600, 600

def draw_pentagon_with_triangles():
    glBegin(GL_TRIANGLES)
    colors = [(1, 0, 0), (0, 1, 0), (0, 0, 1), (1, 1, 0), (1, 0, 1)]
    center = (0.0, 0.0)
    radius = 0.5
    for i in range(5):
        glColor3fv(colors[i % len(colors)])
        angle1 = 2 * math.pi * i / 5
        angle2 = 2 * math.pi * (i + 1) / 5
        glVertex2fv(center)
        glVertex2f(math.cos(angle1) * radius, math.sin(angle1) * radius)
        glVertex2f(math.cos(angle2) * radius, math.sin(angle2) * radius)
    glEnd()

def draw_pentagon_with_lines():
    glColor3f(1.0, 1.0, 0.0) # Yellow
    glBegin(GL_LINE_LOOP)

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radius = 0.5

for i in range(5):
    angle = 2 * math.pi * i / 5
    glVertex2f(math.cos(angle) * radius, math.sin(angle) * radius - 1.2) # move down
glEnd()

def draw_house():
    glColor3f(1.0, 0.0, 1.0) # Pink

    # House base
    glBegin(GL_LINE_LOOP)
    glVertex2f(-0.6, -0.8)
    glVertex2f(0.6, -0.8)
    glVertex2f(0.6, 0.0)
    glVertex2f(-0.6, 0.0)
    glEnd()

    # Roof (triangle)
    glBegin(GL_LINE_LOOP)
    glVertex2f(-0.6, 0.0)
    glVertex2f(0.6, 0.0)
    glVertex2f(0.0, 0.6)
    glEnd()

    # Left window
    glBegin(GL_LINE_LOOP)

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glVertex2f(-0.5, -0.3)
glVertex2f(-0.2, -0.3)
glVertex2f(-0.2, -0.05)
glVertex2f(-0.5, -0.05)
glEnd()
```

Right window

```
glBegin(GL_LINE_LOOP)
glVertex2f(0.2, -0.3)
glVertex2f(0.5, -0.3)
glVertex2f(0.5, -0.05)
glVertex2f(0.2, -0.05)
glEnd()
```

Door

```
glBegin(GL_LINE_LOOP)
glVertex2f(-0.15, -0.8)
glVertex2f(0.15, -0.8)
glVertex2f(0.15, -0.4)
glVertex2f(-0.15, -0.4)
glEnd()
```

Doorknob

```
glBegin(GL_POINTS)
glVertex2f(0.1, -0.6)
glEnd()
```

```
def display():  
    glClear(GL_COLOR_BUFFER_BIT)  
  
    # Draw each item with a small vertical offset  
    draw_pentagon_with_triangles()  
    draw_pentagon_with_lines()  
    draw_house()  
  
    glFlush()  
  
def init():  
    glClearColor(0.0, 0.0, 0.0, 1.0) # black background  
    glColor3f(1.0, 1.0, 1.0)  
    gluOrtho2D(-1.0, 1.0, -1.5, 1.0)  
  
def main():  
    glutInit(sys.argv)  
    glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB)  
    glutInitWindowSize(width, height)  
    glutInitWindowPosition(100, 100)  
    glutCreateWindow(b"OpenGL Shapes - Pentagon and House")  
    init()  
    glutDisplayFunc(display)  
    glutMainLoop()
```

```
if __name__ == "__main__":  
    main()
```

